

A LEAF BLIGHT OF THE AMERICAN MISTLETOE, PHORADENDRON FLAVESCENS (PURSH) NUTT.

F. A. WOLF

(WITH PLATE 32, CONTAINING 3 FIGURES)

The American mistletoe, which is known to be largely a water parasite on various species of deciduous trees, is in turn the host of several parasitic fungi. Attention was directed, during the past year, to one of these fungi which causes a diseased condition of the foliage. The material for the study and the field notes on the general symptomology were furnished by Professor Carl Hartmann, of Huntsville, Texas. A detailed study as to the causal organism shows that the trouble is due to an apparently undescribed species of *Macrophoma*.

Recently* a diseased condition of the twigs of the European mistletoe, *Viscum album*, was described as occurring in Germany. This was found to be due to *Macrophoma Visci* Aderh. That this species of *Macrophoma* is not identical with the one occurring on the American mistletoe was clearly shown in the detailed examination which was made.

The disease manifests itself by chlorosis of a part or the whole of the leaf, then the affected foliage becomes darker and is finally dark-brown and dead. At this stage the leaves may fall, so that in severe cases the entire plant may be defoliated, or, as more frequently happens, only part of the leaves are killed. Apparently, the injury to the mistletoe is only temporary, as it renews its activity with the seasonal growth of its host, and new shoots and leaves are formed.

The prominent pycnidia are quite uniformly scattered (*pl.* 32, *f.* 1) and are present on both leaf surfaces. They are formed within the tissue of the leaf and at maturity rupture the epidermis and protrude by a central ostiole. They are globular or somewhat flattened in shape, dark-brown in color, and vary in

* Aderhold, Rud. Arb. Biol. Abt. Kaiserl. Gesundheitsamt 462-463. 1905.

diameter from $180-210\mu$. From sections of material fixed in chrom-acetic acid and stained with Haidenheim's iron-alum-haematoxylin, the parenchymatous character of the pycnidium wall was very apparent (*pl. 32, f. 3*).

The spores are oval or elongate, $24-34 \times 15-18\mu$, very densely granular and with several prominent guttulae (*pl. 32, f. 2*). They are not surrounded by a mucilaginous envelope so as to cause them to come out of the pycnidium in ropes or chains, but are extruded singly. Quite frequently, when a pycnidium is crushed or torn open, a portion of the short sporophore remains attached to the spore.

The points of difference between the species on *Viscum album* and this species on *Phoradendron flavescens* are shown in the following tabulation:

	<i>Macrophoma Visci</i>	<i>Macrophoma Phoradendri</i>
Ostium	absent	present
Pycnidia	$300-400\mu$ diam.	$180-210\mu$ diam.
Spores	$43-66 \times 18-21\mu$	$24-34 \times 15-18\mu$
	Elliptic and slightly constricted at the middle, extruded in strands, held together in a mucilaginous matrix	Elliptic and extruded singly

These differences, together with the difference of hosts, would warrant a specific rank; hence the name *Macrophoma Phoradendri* is proposed for this new species, a technical description of which follows:

***Macrophoma Phoradendri* sp. nov.**

Foliis initio flavescens demum atro-brunneis; pycnidiis amphigenis, sparsis, globosis, brunneis, primo innatis dein ostiolo perforantibus, $180-210\mu$, contextu parenchymatico constituto; sporulis oblongis vel ellipsoideis, utrinque rotundatis, plasmate granuloso farctis, continuis, hyalinis, $24-34 \times 15-18\mu$, basidiis brevibus suffultis.

Hab. in foliis vivis *Phoradendri flavescens* quae desidere faciunt.

Type specimen, No. 3192, Myc. Herb. Dept. Bot., Univ. of Texas, Austin, Texas.

SCHOOL OF BOTANY,
UNIVERSITY OF TEXAS,
AUSTIN, TEXAS.

EXPLANATION OF PLATE XXXII

Fig. 1. Diagrammatic drawing of a mistletoe leaf showing the distribution of the pycnidia.

Fig. 2. Several spores of *Macrophoma Phoradendri*, two of which show the short, broken remnant of the sporophore. $\times 416$.

Fig. 3. A section of the pycnidium showing the protruding ostiole, the character of the pycnidium wall, and the origin of the spores. $\times 416$.